VFHV570
Extended Temperature/COTS
VCXO 5x7mm SMD, CMOS

Features

- 1MHz to 80MHz frequency range
- -55°C to +175°C operating temperature range
- <0.2ps RMS Jitter over 12kHz to 20MHz
- APR typ. ± 100ppm
- Start-up time is less than 5ms

RoHS Status

RoHS 6/6

Applications

- Industrial
- Military
- High Temperature

Description:

These high reliability oscillators provide CMOS waveforms for applications subjected to the most stringent environmental conditions. They are mechanically robust and weigh less than 0.2 grams. This 5x7 mm SMD package has a hermetic seal, thus ensuring the integrity of the part. Each oscillator is burned-in at 125°C for 160 hours, temperature cycled and centrifuged then fully tested in accordance with Table 1. Reliability tests are performed per Table 2.

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		1		80	MHz	
Frequency Stability	ΔF/F	Includes operating temperature, change of input voltage, change of load, shock and vibration		± 50 ±30		ppm	-55°C to +125°C (L) -55°C to +85°C (H)
Aging		First Year After First Year		3 1		ppm ppm/yr	
Pull Range	APR	V_{DD}= 3.3V; V_C 1.65 ± 1.65V	±90 ±50	±105		ppm	(L,H) (K,R)
		V_{DD}=5V; V_C 2.5 ± 2.5V	±100 ±65	±110			(L,H) (K,R)
Operating Temperature	T		-55		+175	°C	See ordering information
Supply Voltage	V_{CC}		3.0 4.5	3.3 5.0	3.6 5.5	V	
Supply Current	I_{CC}		3.0		5.0	mA	*CL=15 pF* *V_{DD}= 3.6V*
			4.0		7.0		*CL=15 pF* *V_{DD}= 5.5V*

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CTS ELECTRONIC COMPONENTS

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Current Consumption	I_{DDD}	CL=15pF, V_{DD}=3.6V, 5.5V OE=0V, F0=27MHz		1	2	mA	*@ output disable*
Output Off Leak	I_O	OE=0V			10	µA	*@ output disable*
"H" Input Current	I_{IH}	$V_{IN}=V_{DD}$			1	µA	
"L" Input Current	I_{IL}	$V_{IN}=V_{SS}$		1.3	10	µA	
"H" Output Voltage	V_{OH}	I_{OH}=-5mA	V_{DD}-0.4			V	I_{OH}=-3mA
"L" Output Voltage	V_{OL}	I_{OL}=-5mA			0.4	V	I_{OH}=3mA
Rise & Fall Times		CMOS, 15pF	3.0		6.0	ns	+125°C
RMS Jitter 12kHz to 20MHz	1σ			<0.2		ps	
Phase Noise		10Hz 100Hz 1kHz 10kHz 100kHz 1MHz		-65 -94 -120 -142 -155 -159		dBc/Hz	@ 50MHz
Input Impedance	V_C Impedance	Pad 1, Vc	5* 100			MOhm kOhm	Order Code H* Order Code B
Start-up Time	Ts				5	ms	
Duty Cycle		CMOS @50% V_{DD}		48/52	45/55	%	
Control Voltage	V_C		0		3.3	V	3.3V
			0		5.0		5.0V
Modulation Bandwidth	F_C		15	20		kHz	3.3V
			15	20			5.0V
Pulling Linearity	F_{LIN}			10	15	%	
Tristate	Input HIGH (>2.5V) or floating: Input LOW (<0.5V):		ACTIVE HIGH IMPEDANCE				

*Available for 3.3V only.

Absolute Maximum Rating

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Voltage	V_{DD}		V_{SS} -0.5		7	V	
Input Voltage	V_{IN}	All Input Pins	V_{SS} -0.5		V_{DD}+0.5	V	
Output Voltage	V_{OUT}		V_{SS} -0.5		V_{DD}+0.5	V	
Power Dissipation	I_{OUT}				30	mA	
ESD		MM		±200			
		HBM		±2000			

Environmental and Mechanical Conditions

Parameter	Conditions
Shock	1000 Gs, 0.35 ms, ½ sine wave, 3 shocks in each plane
Vibration	10-2000 Hz of 0.06" d.a. or 20Gs, whichever is less
Humidity	Resistant to 85° R.H. at 85°C
Leak	Per MIL-STD-883, Method 1014, Condition A and Condition C
Case	Hermetically sealed ceramic LCC
Pads	39 microinch of gold over nickel
Resistance to Solvents	Per MIL-STD-202, Method 215
Marking	Epoxy ink or laser engraved

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How to Order:

VFHV570 – E L H – FREQUENCY, MHz

Voltage

Code	Specification
D	5.0V
E	3.3V

Temperature Range

Code	Specification
R	-40°C to +175°C
L	-55°C to +125°C
H	-55°C to +85°C
K	0°C to +175°C

Input Impedance

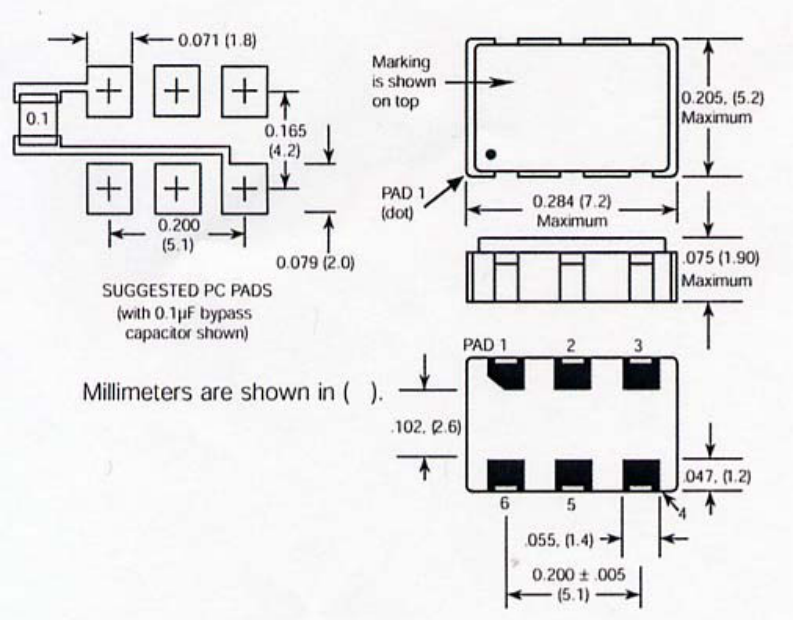
Code	Specification
H	5MOhm*
B	100KOhm

*3.3V only

Pin Assignments

Pin #	Connections
1	V_C
2	Tristate
3	Ground, Case
4	Output
5	N/C
6	V_{CC}

Package



Marking Specification